

Application/Control Number: 09/883,444

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1. (amended) A method of recording teletext data comprising the steps of:

receiving teletext data at a standard data rate of teletext data;

converting the teletext data to a multilevel code having more than two code levels, at a data rate which is lower than the standard data rate of the teletext data; and

recording the multilevel code on a record carrier.

2. (amended) The method of Claim 1 in which the multilevel code includes a signal having more than two amplitude levels that provide respective code levels.

3. (amended) The method of Claim 1 in which the multilevel code has four code levels and the lower data rate is half of the standard teletext data rate.

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4. (amended) The method of Claim 1 in which the multilevel code has eight code levels and the lower data rate is one third of the standard teletext data rate.

5. (amended) A method of replaying teletext data comprising the steps of:

- reading a multilevel code from a record carrier, the multilevel code having more than two code levels;

- converting the multilevel code to standard teletext data, and
- applying the teletext data to a teletext encoder.

6. (amended) Apparatus for recording teletext data, comprising:

- means for receiving a video signal including teletext data,

- means for detecting received valid teletext data,

- means for encoding the received teletext data into a multilevel code having more than two code levels, at a data rate which is less than the standard teletext data rate, and

- means for recording the multilevel code on the record carrier.

7. (amended) The apparatus of Claim 6 in which the means for encoding teletext data include:

- means for applying the received teletext data to an encoder in n-bit packets, where n is greater than one,

- means for converting each n-bit packet into a multilevel code having at least one level for each n-bit combination, and

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means for feeding the multibit code to the recording head of the recorder at a data rate of $1/n$ times the standard teletext data rate.

8. (amended) The apparatus of Claim 7 in which $n=2$.

9. (amended) The apparatus of Claim 7 in which $n=3$.

10. (amended) The apparatus of Claim 6 further comprising a buffer RAM connected between the means for detecting teletext data and the means for encoding.

11. (amended) The apparatus of Claim 10 in which:
the buffer RAM receives only teletext data packets; and
the encoding means generate a clock run in and a framing code.

12. (amended) The apparatus of Claim 6 in which the multilevel code includes a plurality of amplitude levels that provide respective code levels.

13. (amended) Apparatus for replaying teletext data, comprising:
means for feeding a multilevel code signal having more than 2 code levels, to a decoder to convert the multilevel code to a binary code at the standard teletext data rate; and
means for multiplexing the binary code with the video signal for application to a teletext decoder.

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14. (amended) The apparatus of Claim 13 in which the multilevel code is a four level code and the decoder produces two bits from each four level code.

15. (amended) The apparatus of Claim 13 in which the multilevel code is an eight level code and the decoder produces three bits from each eight level code.

16. (amended) The apparatus of Claim 13 in which data from the decoder is written into a buffer RAM.

17. (amended) The apparatus of Claim 16 further comprising a teletext encoder to receive data from the buffer RAM.

18. (amended) The apparatus of Claim 16 in which the teletext encoder includes means for generating the clock run-in and framing code.

19. (amended) The apparatus of Claim 13 in which the decoder includes an equalizer.

20. (amended) The apparatus of 9 in which the equalizer is a decision feedback equalizer.

21. (amended) The apparatus of Claim 13 in which the multilevel code includes a plurality of amplitude levels that provide respective code levels.

Add claims 22-27.

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22. The method of claim 1 in which the multilevel code includes a signal having a first phase and one or more additional phases that provide respective code levels.

23. The apparatus of claim 6 in which the multilevel code includes a signal having a first phase and one or more additional phases that provide respective code levels.

24. The method of claim 13 in which the multilevel code includes a signal having a first phase and one or more additional phases that provide respective code levels.

25. The method of Claim 1 in which:
the multilevel code includes a signal having more than two amplitude levels;
the multilevel code includes a signal having more than one phase; and
the multilevel code has four code levels and the lower data rate is half of the standard teletext data rate or the multilevel code has eight code levels and the lower data rate is one third of the standard teletext data rate.

26. The method of Claim 5 in which:
the multilevel code includes a signal having more than two

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amplitude levels;

the multilevel code includes a signal having more than one phase; and

the multilevel code has four code levels and the multilevel code has a data rate of half of the standard teletext data rate or the multilevel code has eight code levels and the multilevel code has a data rate of one third of the standard teletext data rate.

26. The apparatus of Claim 6 in which

the means for encoding teletext data include:

means for applying the received teletext data to an encoder in n-bit packets, where n is greater than one,

means for converting each n-bit packet into a multilevel code having at least one level for each n-bit combination, and

means for feeding the multibit code to the record head of the recorder at a data rate of $1/n$ times the standard teletext data rate;

$n=2$ or $n=3$;

a buffer RAM is connected between the means for detecting teletext data and the encoder;

the buffer RAM receives only teletext data packets; and

the encoder includes means for generating the clock run in and framing code;

the multilevel code includes three or more amplitude levels;

and

the multilevel code includes a plurality of signal phases.

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27. The apparatus of Claim 13 in which:

the multilevel code is selected from: a four level code and the decoder produces two bits from each four level code; and an eight level code and the decoder produces three bits from each eight level code;

data from the decoder is written into a buffer RAM;

the apparatus further comprises a teletext encoder to receive data from the buffer RAM;

the teletext encoder includes means for generating the clock run-in and framing code;

the decoder includes an equalizer;

the equalizer is a decision feedback equalizer;

the multilevel code includes a plurality of amplitude levels;

and

the multilevel code includes a plurality of phases.